5.4 James City County Profile

The following sections present a detailed assessment of critical hazards that affect James City County. Understanding these hazards will assist the Peninsula region in its process of identifying specific risks and developing a mitigation strategy to address those risks.

5.4.1 Flooding – James City County

Due to its geographic location, James City County is susceptible to tidal and non-tidal flooding. Storms associated with coastal flooding include tropical cyclones and nor'easters. These types of events typically drop large amounts of rain and generate high winds that result in storm surge and non-tidal flow resulting from upstream precipitation. Storm surge is the water that is pushed toward the shore by the persistent force of the winds of an approaching storm. Astronomical tides occur independent of climactic conditions. Depending on the tide level at the time a land-falling storm surge may be elevated. Flash flooding and urban flooding are also a concern within the County limits.

As part of the NFIP, FEMA has created a Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) for James City County. In addition, the NCDC tracks the occurrence of flooding events for communities across the nation. All of these data sources were utilized in developing the hazard identification and vulnerability assessment.

FEMA published a FIS for James City County, dated February 6, 1991. The FIRMs, which accompany this FIS, delineate the 100- and 500-year flood hazard boundaries for flooding sources identified in areas of growing development or areas predicted to have future development, at the time of the report. A detailed wave height analysis was developed in order to delineate the 100- and 500 year flood hazard boundaries for the County. This analysis resulted in a 100-year stillwater elevation of 8.5 feet for the County and a maximum 100-year wave crest of 11 to 13 feet. Refer to this report for a detailed description of methods and assumptions. The significant flood events outlined in the FIS are given below in Table 5.4.1a.

Table 5.4.1a- Significant Flood Events – James City County

Date	Storm	Tide Elevations
August 1933	Hurricane	Max tide heights averaged 8 feet
April 1956	Nor'easter	Not given
October 1957	Hurricane – Not Named	Not given
September 1960	Hurricane Donna	Not given
March 1962	Nor'easter	Max tide heights averaged 6.8 feet

Source: FEMA 1991

The NCDC, operated by NOAA, keeps a record of significant weather related events and damage estimates for the entire country. Listed below (Table 5.4.1b) are the significant events that have affected James City County.

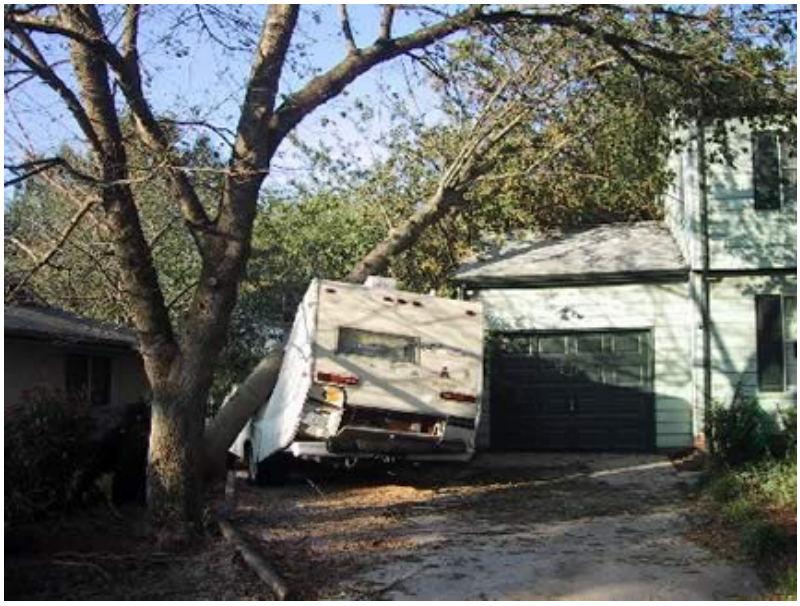
Table 5.4.1b- NCDC Listed Significant Flood Events –James City County

Date	Event	Precipitation	Comments
September 15 to 17, 1999	Hurricane Floyd	12 to 18 inches	▪ Numerous roads washed out due to flooding ▪ Flooding considered 500-year flood ▪ Enormous crop damage
July 19, 2000	Flash Flood	Not given	▪ Heavy rain caused flooding and road closures of Routes 30 and 60 near Toano

5.4.2 Hurricanes – James City County

The FIS for James City County identified three hurricanes and 2 nor'easters that affected the County (see Table 5.4.1a above); however, specific damage estimates were not given. The NCDC dataset listed five hurricanes for James City County for the period between 1950 to June 2004. These storms are listed in Table 5.4.2. As in all other Peninsula communities, there are clear gaps and overlaps in the available data.

Hurricane Floyd moved through the area dropping four to five inches of rain within 24 hours and generated winds in excess of 40 mph. Throughout the Peninsula, trees and power lines were knocked down and roads were flooded; over 5,500 homes were left without power.



Hurricane Isabel tree damage in James City County

Hurricane Isabel made landfall on September 18, 2003 as a Category 2 hurricane near Drum Inlet, North Carolina. Hurricane Isabel is considered to be one of the most significant tropical cyclones to hit this area since hurricane Hazel (1954) and the Chesapeake-Potomac Hurricane of 1933. Isabel produced storm surges 6 to 8 feet above normal high tide levels and is directly responsible for 10 deaths in Virginia and indirectly responsible for 22 deaths. Isabel caused widespread wind and storm surge damage in eastern North Carolina and southeastern Virginia, currently estimated at $925 million in Virginia. All of the above data was taken from the NOAA Tropical Cyclone Report for Hurricane Isabel (Beven and Cobb, 2004).

Table 5.4.2- Historic Hurricanes – James City County

Date	Storm Name	Category	Descriptions
August 15, 1995	Felix	Not given	▪ No major damage reported in VA ▪ Tides 2.0-2.5 feet above normal
July 12, 1996	Hurricane	Not Given	▪ None given
September 1, 1999	Dennis	Hurricane/Tropical Storm	▪ Prolonged period of tropical cyclone ▪ Highest sustained winds at Langley 52 mph ▪ Generated a F2 tornado ▪ Tide 3 feet above normal ▪ Coastal flooding ▪ 2 to 5 inches of rain ▪ $27,000 damage
September 15, 1999	Hurricane Floyd	Category 1	▪ Spawned 2 tornados ▪ Hundreds of downed tress ▪ Tide 3.9 feet above normal ▪ Numerous roads washed out ▪ $99.4 million in property damage over the entire affected area ▪ Dam failure near Scotland Ferry/Route 31- this led to houses being flooded
September 18, 2003	Hurricane Isabel	Category 1/Tropical storm	▪ Hundreds of downed tress ▪ Loss of power ▪ Damaged residents and businesses ▪ Greatest storm surge since Hazel
August 18, 2004	Charley	Hurricane	▪ Highest sustained wind was 73 mph ▪ Uprooted of trees and downed numerous power lines ▪ Over 2 million Virginians without power ▪ Heavy rain and wind gust
September 8, 2004	Frances	Hurricane	▪ Generated 9 tornados in Central Virginia ▪ High winds ▪ Large amounts of rainfall/flooding
September 17, 2004	Ivan	Hurricane	▪ Spawned unconfirmed tornados ▪ Power outage (66,000) ▪ Heavy rain/flooding
September 28, 2004	Jeanne	Hurricane	▪ Flash flooding/heavy rainfall ▪ Power outage
August 30, 2004	Gaston	Tropical Depression	▪ Hard rains that processed flooding ▪ Roads under water ▪ Power outage (99,600 statewide)

5.4.3 Tornados – James City County

James City County has experienced three tornados over the period of 1896 to 1999 (Table 5.4.3), which have caused a variety of damage. The most significant tornado occurred on October 14, 1986, which generated wind of 110 mph and cause $1.8 million in damages over the entire affected area.

Table 5.4.3-Historic Tornados – James City County

Date	Magnitude	Deaths	Injuries	Descriptions
July 8, 1896	Not Given	Not Given	2-5	▪ Spawned by a hurricane ▪ Barns and small houses destroy
May 8, 1984	Not Given	Not Given	Not Given	▪ Spawned by sever thunderstorms ▪ Destroyed three mobile homes
October 14, 1986	F2	Not Given	Not Given	▪ Downburst of 110mph ▪ Damages of $1.8 million over entire affected area

5.4.4 Wildfire – James City County

Wildfires are caused through human acts like arson or careless accidents, or through natural occurrences, such as lightning strikes. Wildfire danger can vary greatly season to season and is often exacerbated by dry weather conditions. Because of wildfire risk, VDOF has developed Fire Risk Assessment Maps designed to help communities determine areas with the greatest vulnerability.

The Wildfire Risk Assessment Map, Map C-3, delineates the aerial extent of wildfire vulnerability within James City County. Approximately 33 percent of the County lies within a high wildfire risk area. Parameters used to establish these risk boundaries are land use, population density, slope, land cover and proximity to roads. The proximity of the tree lines or brush to the highway or roadway is also included in the wildfire risk analysis to capture the human/wildfire causal relationship. Travel corridors increase the probability of human presence across a landscape, thereby increasing the probability of wildfire ignition. As such, areas closer to roads are much more likely to attain a higher ignition probability. James City County is currently experiencing an accelerated development rate. Land that once was rural and relatively inaccessible is now either under development or planned for development. Although the clearing of land for development removes potential fuel sources for wildfire, the wildfire hazard is not necessarily diminished because human access to the area is significantly increased. This development trend expands the wildland/urban interface, which place structures in close proximity to large amounts of vegetation, which in turn increases the risk of wildfire (NWUIFPP undated).

5.4.5 Vulnerability Assessment – James City County

The PHMPC conducted a vulnerability analysis for each critical hazard that was identified. As several of these hazards are prone to occur in any part of the County, the exposure associated with tornados and winter storms is assumed to include the entire County. This section describes the method used to perform the vulnerability analysis for each hazard and then lists the results.

Flooding – James City County

The County provided a flood layer, a tax parcel layer, and a tax assessor database. These layers were overlaid to determine the number of parcels that intersect the 100-year floodplain. The tax assessor database was used to determine the improvement values of these properties.

The analysis showed that there are 2,133 parcels that intersect the 100-year floodplain. These parcels have an improvement value of $979,665,400.

FEMA has developed a concept to highlight the impact that repetitively flooded structures have had on the NFIP. The term "repetitive loss," as applied to the NFIP, refers to any property for which two or more flood insurance claims in excess of $1,000 each in a 10-year period of time have been paid. In 1998, FEMA reported that the NFIP's 75,000 repetitive loss properties have already cost $2.8 billion in flood insurance payments and numerous other flood prone properties continue to remain at high risk in the nation's floodplains. While these properties make up only one percent of the flood insurance policies currently in force, they account for 30 percent of the country's flood insurance claim payments. A report on repetitive loss structures completed by the National Wildlife Federation found that 20 percent of these structures are listed as being outside of the 100-year floodplain (Conrad et al. 1998).

Including flood insurance claims paid as a result of flood damage caused by Hurricane Isabel in 2003, FEMA has identified seven structures as repetitive loss structures in James City County.

Hurricane – James City County

Hazards U.S. – Multi Hazard (HAZUS®*MH*) was utilized to perform a wind hazard analysis for the entire Peninsula region. HAZUS®*MH* software is a multi-hazard loss estimation program that was developed under a cooperative agreement between the National Institute of Building Sciences and FEMA. The current version of HAZUS®*MH* has the ability to calculate earthquake, wind, and flood hazards as well as potential economic losses associated with these hazards. The software is designed with the flexibility to perform loss estimations at three different levels. Level 1 utilizes all default parameters built into the software. Levels 2 and 3 require user defined scenarios and building inventory data. For the purpose of this Plan, a Level 1 wind analysis was performed to calculate the wind hazard for each Peninsula community. The probabilistic scenario activates a database of many thousands of storm tracks and intensities. This scenario generates hurricane hazards based on set return periods. These return periods define the statistical probability that a storm of a given size and intensity could occur within any year.

Table 5.4.5a lists the total dollar value of exposed structures for James City County. The default data set provided with the HAZUS®*MH* software is based on the 2002 Census data. This analysis depicts the probability of occurrence and can generally be used estimate potential damages due to high winds.

Table 5.4.5a-Total dollar value of Exposed Structures from HAZUS®MH – James City County

Occupancy Type	Value of Exposed Structures ($1,000)
Residential	$3,111,100
Non-Residential	$740,910
Total	**$3,852,010**

The probabilistic analysis generated with the HAZUS®MH software utilized the same building stock information listed above. The probabilistic scenario generates hurricane hazards based on set return periods. These return periods define the statistical probability that a storm of a given size and intensity could occur within any year. The probabilistic method was used to generate loss estimations of storms with specific recurrence intervals: 10-, 20-, 50-, 100-, 200-, 500-, and 1000-year. Since residential structures comprised a significantly large percentage of the occupancy classification these data are presented in Table 5.4.5b below.

Table 5.4.5b-Summary of Probabilistic Analysis – Residential Structures – James City County

Return Period	Residential Building Damage – Number of Buildings			
	Minor	Moderate	Severe	Destruction
10-year	10	0	0	0
20-year	83	3	0	0
50-year	630	37	2	0
100-year	58	2	0	0
200-year	5,029	1,113	74	66
500-year	7,400	3,235	578	533
1000-year	7,442	3,554	735	700

Tornado Vulnerability – James City County

The facilities and building stock that were identified as exposed under hurricane hazards are also exposed to tornado hazards. Tornados are random natural events that strike with little warning but are associated with thunderstorms and hurricanes. No damage estimates have been created for tornados that might strike James City County.

Wildfire – James City County

The Wildfire Risk Assessment data, provided by the Virginia Department of Forestry, was utilized to estimate the wildfire risk for James City County. This data layer was overlaid with the County's tax parcel mapping in order to estimate the value of at risk structures. The VDOF also provided the number of wildfire incidences reported from 1995 to 2001.

According to the VDOF, no incidences of wildfire were reported for James City County from 1995 to 2001. Analysis of the County resulted in 13,678 parcels intersecting a high wildfire zone. These parcels have a total improvement value of $3,881,690,400.

Critical Facilities

In order to assess the vulnerability of a community to natural hazards, the PHMPC conducted an inventory of James City County structures and critical facilities (Appendix E). Critical facilities are those facilities that warrant special attention in preparing for a disaster and/or facilities that are of vital importance to maintaining citizen life, health, and safety during and/or directly after a disaster event. The inventory of critical facilities for James City County includes emergency response facilities such as police stations, fire departments, emergency medical service stations (EMS), public facilities including schools and local government buildings. Those facilities that are geographically located within an identified hazard zone are listed below (Table 5.4.5c).

Table 5.4.5c- Critical Facilities at Risk - High Wildfire Hazard Zone

Name	Code	Number
Fire Station 5	FR	3
Fire Station 3	FR	5
Law Enforcement Center	PO	1
Jamestown High School	SC	5
James River Elementary School	SC	13

Source: AMEC
Critical Facility Key Code, see Appendix E

5.4.6 Capability Assessment – James City County

As an additional tool to assist with the examination of the hazards identified and to evaluate the community's ability to plan, develop, and implement hazard mitigation activities, the planning team developed a local capability assessment for James City County. This assessment is designed to highlight both the codified, regulatory tools available to the community to assist with natural hazard mitigation as well as other community assets that may help facilitate the planning and implementation of natural hazard mitigation over time. The following Capability Assessment Matrix has been used as a basis for James City County's mitigation plan.

Table 5.4.6 - Capability Matrix – James City County

	James City County
Comprehensive Plan	Yes
Land Use Plan	Yes
Subdivision Ordinance	Yes
Zoning Ordinance	Yes
Floodplain Management Ordinance	Yes
-Effective Flood Insurance Rate Map Date	2-6-91
-Substantial Damage Language	Yes, but not called "substantial damage"
-Certified Floodplain Manager	No

	James City County
-Number of Floodprone Buildings	200
-Number of NFIP policies	476, as of 12/03
-Maintain Elevation Certificates	Yes
-Number of Repetitive Losses	7
CRS Rating	Class 9
Stormwater Program	Yes
Building Code Version Full-time Building Official	VUSBC (IBC 2003) Yes
- Conduct "As-built" Inspections	Yes
- BCEGS Rating	3
Emergency Operations Plan	Yes
Hazard Mitigation Plan	Yes
Warning Systems in Place	Yes
-Storm Ready Certified	No
-Weather Radio Reception	Yes
-Outdoor Warning Sirens	Yes, just for Surry
-Emergency Notification (R-911)	Yes
-other (e.g., cable override)	CERT, cable over-ride
GIS system	Yes
-Hazard Data	Yes
-Building footprints	Yes
-Tied to Assessor data	Yes
-Land Use designations	Yes
Structural Protection Projects	Yes
Property Owner Protection Projects	Yes
Critical Facilities Protected	Not fully
Natural Resources Inventory	Yes
Cultural Resources Inventory	Yes
Erosion Control Procedures	Yes
Sediment Control Procedures	Yes
Public Information Program/Outlet	Yes
Environmental Education Program	Yes

Form of Governance

James City County is divided into five election districts, each of which is represented by an individual who serves on the Board of Supervisors for four years. Current terms are staggered, with representatives from three of the districts elected in one year and representatives from the other two districts elected two years later. The Board of Supervisors passes all laws and determines all policies that govern the County. The Board appoints a County Administrator, most boards and commissions, appropriates funds for County operations, and generally oversees all County functions. The County Administrator is the chief administrative officer of the County

and is responsible for executing Board policies. The Administrator acts as Clerk to the Board and handles the daily administrative operations of the County, as well as its long-range and strategic planning.

Guiding Community Documents

James City County has a range of guidance documents and plans for each of their departments. These include a comprehensive plan, strategic plans, streetscape policy guide, community appearance guide, and emergency management plans. The County uses building codes, zoning ordinances, subdivision ordinances, and various planning strategies to address how and where development occurs. One essential way the County guides its' future is through policies laid out in the Comprehensive Plan.

2003 Comprehensive Plan

James City County's *2003 Comprehensive Plan* features the following:

- A long-range plan for the physical development of the County by focusing on controlling residential growth while preserving the County's natural beauty, improving education and maintaining public services and a healthy economy.
- Land Use designations describing Conservation Areas as "critical environmental areas where ordinary development practices would likely cause significant environmental damage." These lands include wetlands, marshes, flood hazard areas, steep slopes, critical plant and wildlife habitats, and streambanks. Conservation areas should remain in their natural state. Development, if it occurs, should consider negative impacts and methods to mitigate or eliminate these impacts.
- Environmental concerns including: decreasing water supply and quality; increased soil erosion and stormwater runoff, loss of scenic vistas, destruction of wildlife habitats, deforestation, air pollution and loss of agricultural lands.
- Environmental goals focused on air, land, noise, solid waste, and water elements, including water quality, protecting wetlands, marshes and rivers from degradation, protecting shoreline property from erosion and minimizing the need for streambank and shoreline erosion controls. The floodplain management regulations are cited as contributing toward both water quality and shoreline erosion control.
- Maps and detailed sections regarding aquatic resources, shoreline and streambank erosion problems and public/private waterfront access areas.

James City County prepared a *Development Potential Analysis Report* in 2002 to identify and quantify the residential development potential of properties located within the County's Primary Service Area (PSA). The Real Estate Assessment Subdivision Data Zone Database was the primary source of reference for identifying parcels and their associated improvement value. A total of 3,850 platted/vacant lots were identified in residential zoning with development potential.

Current development pressure and projects under construction or site plan review are located west of Interstate 64, and primarily in the Berkeley Powhatan and Stonehouse Districts of the County, especially along Richmond Road in the southern part of Stonehouse. A special *Five Forks Study Area Traffic Impact Alternatives Analysis* was conducted in 2004 to identify and analyze the development and redevelopment potential within the Five Forks Area. Five Forks is a developed area in the immediate vicinity of the intersection of John Tyler highway (State Route 5) and Ironbound Road (State Route 615). The study focused on existing traffic conditions and expected traffic impacts associated with four future land use scenarios. Emergency evacuation does not appear to be a factor considered in the study.

Zoning & Development Standards

- Identifies existing Federal and state regulations for wetland, floodplain, and RPA/RMA protection.
- The document outlines required standards for new development and redevelopment based on use and zoning designation.

James City County has adopted a floodplain management ordinance that exceeds the minimum requirements of the NFIP. The Flood Zone District is designated as an Overlay District in County Code, Chapter 24, Division 3. The community has seven repetitive losses through the NFIP. Manufactured homes are not a permitted use in the floodplain, although there are some existing units in the floodplain and replacements are allowed with freeboard and proper anchoring. The ordinance outlines very specific hazardous materials/uses that are not permitted in the overlay district, including oil and oil products, radioactive materials, and specific poisons.

One foot of freeboard above the BFE is required for structures in the floodplain. Substantially damaged structures are addressed in §24-602 of the ordinance, entitled "Existing Structures in Floodplain Districts." Although the NFIP term "substantial damage" is not used, the resultant requirements are comparable. Flood hazard information is not currently noted on site plan applications or checklists, or the building permit application.

James City County participates in the NFIP's Community Rating System, and has maintained a Class 9 rating since 1992, rewarding property owners, countywide, with a five percent reduction in flood insurance premiums.

The County's Development Review Committee (DRC), a subset of the Planning Commission reviews large or complicated development plans proposed in the County. Emergency Preparedness, Police and Fire do not participate in DRC reviews; however, the DRC does hear presentations from County staff if there are specific issues requiring attention.

Stormwater Program

The County Environmental Division's role is to protect the natural resources through effective management of public and private land development and enforcement of environmental activities. Through Land Disturbance permits, the division enforces ordinances related to

stormwater management, erosion and sediment control and the Chesapeake Bay Preservation Act. The division also promotes watershed management through development of watershed plans, specifically for Powhatan Creek and Yarmouth Creek.

To meet the requirements of the Chesapeake Bay Preservation and Sediment Control Ordinances, virtually all new commercial and residential developments in James City County require the construction of one or more Best Management Practice (BMP) facilities. The majority of BMP facilities are wet or dry ponds but a few are infiltration-type facilities. These facilities store stormwater runoff and treat the water by either slowly releasing the water over a 24-hour period or infiltrating it into the ground.

All BMP facilities require periodic maintenance to ensure that they function as designed and to prolong their useful life. Responsibility for this maintenance is assigned to the BMP owner(s) through a Declaration of Covenants for Inspection/Maintenance. In order to assist BMP owner(s) with the maintenance needs of their BMP, the Environmental Division inspects the BMPs on an annual basis and provides the results of the inspection to the owner(s). The staff also has information available that describes how to maintain the facilities and is available to make presentations to Homeowner Associations.

Public Education

Among the readily available public outreach mechanisms for James City County, the website (http://www.jccegov.com/index.html) provides residents with pertinent information, a property information tool and answers to numerous Frequently Asked Questions (FAQs). The County also posts most of its guiding documents, including the Comprehensive Plan.

The County has many different types of materials available for residents, businesses, teachers, youth, and adult groups. Emergency Preparedness offers refrigerator magnets, a Surry Nuclear Power Station calendar that includes siren testing dates, numerous materials on family disaster planning, and an emergency information flyer. The Surry calendar is distributed to all households within a 10-mile radius of the facility. Fire safety programs and presentations at fairs, shopping centers and community groups are regularly used to share information with the public. Regular programming on County television stations and the County emergency management hotline are additional resources that James City County residents can use to answer questions or learn more about hazards in the area.

County Development Management distributes a *Notice of Flood Hazard* flyer to owners of buildings located in or near floodplains in the County as part of the annual County Flood Hazard Awareness Program. The public library maintains extensive literature on flood hazards and floodplain development.

Emergency Preparedness

Emergency Alert System (EAS) is a national civil emergency alert system that uses message relays between member radio and television stations to inform the public about immediate threats to national security, life, and property. EAS is now routinely used for severe weather

warnings and can also be employed to disseminate Amber Alerts for missing children. The enhancement is an initiative of Governor Warner's Secure Virginia Panel designed to improve statewide preparedness, response, and recovery capabilities for emergencies and disasters. Governor Mark R. Warner announced June 5, 2004, that Virginia will enhance its public warning capabilities with a new satellite-based system that can rapidly transmit EAS messages throughout the Commonwealth. In James City County, warnings are disseminated by radio, TV, weather radio and by police and fire vehicles equipped with public address systems.

The County has contracted with a private radio station for future public disaster-related information specific to James City County. In cooperation with Williamsburg, James City County is installing digital text alert systems for severe weather in public buildings, including schools and libraries. The system incorporates Thunder Eagle Alert System technology which relays weather, Amber and emergency alerts to email, text messaging cell phones and pagers for a large group of people, possibly including government officials, broadcast engineers and emergency management staff. Emergency management officials work closely with the School Board's emergency planner before, during and after disasters. James City County also has a Reverse 9-1-1 system to facilitate telephone contact with select groups of residents based on the nature and location of an impending event. The County maintains an ongoing database of County emergency response incidents and each incident is geographically referenced.

James City County's evacuation planning is prepared by the Virginia Department of Transportation. Phase 1 and Phase 2 evacuation routes are shown and discussed online at http://www.virginiadot.org/comtravel/hurricane-evac-hro.asp. Special needs residents can sign up with Heads Up, James City County's assistance program for residents with special needs such as hearing impaired or wheelchair bound. The confidential database system is activated should emergency personnel need to respond to a medical emergency at an address or during a countywide disaster. Retirement and nursing homes in the area have been extremely pro-active in preparing their facilities to shelter residents in-place during disasters.

James City County's Community Emergency Response Team (CERT) program helps the community respond to disasters during the first 72 hours following a disaster when flooded roads, disrupted communications, and emergency demand outweigh local emergency services. The purpose of CERT training is to provide private citizens with basic skills to handle virtually all of their own needs and then to respond to their community's needs in the aftermath of a disaster.

The Citizen Fire Academy is designed to introduce citizens to the Fire Department, its mission and role in public safety, and to train citizens on their role and responsibilities in fire and life safety. Participants receive information on disaster programs and response, fire extinguisher training, CPR, and how to access the Enhanced 911 system in the most efficient manner.

The Neighborhood Connections program provides a mechanism for relaying pertinent information to homeowners' association leaders in remote areas, with the expectation that these persons could further distribute the information to all residents.

Other Mitigation Activities

Following Hurricane Isabel, the County requested and received FEMA HMGP funds to elevate three homes in Chickahominy Haven. The neighborhood contains many of the County's repetitive losses.

The County has installed diesel generator backup power at the EOC and tied communications to the County intra-net. Satellite service and a standard outside antenna provide additional backup during emergencies. Ham radio operators in the EOC assist with communications during events.

Every one of the 10 schools in the County is approved by the American Red Cross to operate as an emergency shelter. The primary shelter at the James City County/Williamsburg Community Center is configured to receive an emergency generator in case of power outages. Jamestown Elementary School and Stonehouse Elementary School are also prepared for an emergency generator.

The James City County Environmental Division has recently initiated a drainage improvement program, previously authorized by the Board of Supervisors. The purpose of this program is to correct existing drainage and erosion problems that are adversely impacting landowners and the environment. The Environmental Division works with landowners and homeowner associations in the design, contracting and supervision of the restoration work. More than a dozen sites included as projects within James City County have already been identified and prioritized for 2005.